

A Quantitative Analysis of Insurance Demand Behavior in Iran(イランにおける保険需要行動の数量的分析)

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論文内容要旨

In recent years the Iranian government has initiated a policy of openness and privatization in key sectors of the economy, therefore private insurance companies operate side by side with the public sector. In this sense, this segment of the economy is in its infancy and needs a lot of research to explore different aspects of insurance demand. Thus, this study intends to analyze the insurance demand behavior in Iran. At the onset of a new era and in this new environment, insurance companies are eager to know more about the demand for insurance. With the recognition of significant factors in the insurance demand, the insurers make strategic plans and prepare suitable insurance policies to sell in Iran. Also this study helps policy makers to understand the significant variables that affect the insurance industry and help them in their economic planning for the future. We believe that the recent privatization trend in Iran is not sufficient for improvement of the insurance system and social factors like education (that must be promoted by the government) are significant and should be considered. As research about insurance demand in developing countries is very limited, this research studies insurance demand (of households and firms) in Iran to explain the causes of the inactivity in insurance industry in this developing country and to find the remedies for it. In this research life insurance and property insurance are studied separately by using time series analysis to clarify the significant factors affecting their demand. Previous studies usually have considered economic variables on the insurance demand rather than social variables. For instance, Browne and Kim (1993) mention several variables significant in the life insurance demand such as income and inflation but they do not show that education is a significant factor for the demand (for a cross-sectional analysis). However we believe that social factors (such as education) are more significant, especially in developing countries, which are not controlled by any economic agents but only by the government. Among social factors, illiteracy is of much interest. Education leads people to a higher degree of risk aversion and recognition of more kinds of risks and thus more awareness of the necessary role of insurance as a method to cover the risk. In Iran in spite of government efforts, still a lot of people are illiterates. In the case of life insurance we believe that social factors are

more significant than economic factors. For property insurance, which is much more related to economic factors than life insurance, the social variables still seem to be more significant than economic variables. Actually within non-life insurance demand in Iran the role of companies is very significant because Iranian companies usually own much more assets like machinery and buildings to insure compared to individuals' assets, thus it is necessary to consider it. Enhancing the demand creates improvement in the insurance industry that is a guarantee for security and consequently growing investment and then economic development. This research is relevant for several reasons:

It is believed that business insurance protects stockholders against the risk of loss (from a micro level analysis of the companies). But modern financial theory has suggested that investors hedge against insurable risks through diversification, therefore it seems that demand for insurance by corporate clients is not inevitable. But a large amount of insurance premiums are paid by businesses. This apparent contradiction is a motivation to find factors other than simple risk aversion, which motivate the purchase of insurance policies. "Mainly due to data unavailability, empirical tests of the theories are limited" (Yamori, 1999) and these limited papers are concerned with the developed countries, but the corporate demand for insurance is dependent on the economic structure of a country and this structure is different between developing and developed countries. Most notable is that in this research the corporate demand for property-liability insurance in Iran as a developing country is taken into consideration. As for the analysis of property-liability insurance demand amongst firms this is among the few attempts that concentrate on developing countries. Property-liability insurance has a significant role for companies because it protects the assets of the company. Hoyt and Khang (2000) stated that since their study was based on data limited to property insurance, the variable of bankruptcy probability was not significant. The significance of the bankruptcy probability might have been supported with data for liability insurance. Therefore property-liability insurance is considered in this research. In Iran the companies usually do not issue bonds due to regulation thus they rely solely on the limited loans from the banks. According to Davidson, et al. (1992) the primary motivation for firms to purchase insurance is the bondholder's "me-first rule" (their requirement in the case of bankruptcy to get their money back). Therefore we want to find the significant factors in demand. It might be the first time that research considering (at least according to our knowledge at this macro level of analysis) life and property insurance are studied and this much consideration to the analysis of social and economic variables for a developing country together with our extra emphasis on the role of social variables has been presented. The objective of the research is to analyze the insurance demand behavior in Iran and to find the significant factors. For these purposes the data in regard to property insurance, life insurance (macro level) and corporate demand of insurance (micro level analysis of property-liability insurance) in Iran will be used. There are several limitations to this study, such as unavailability of data (for instance a large sample in case of corporate demand).

After introduction, chapter 2 is devoted to a literature review concerning insurance demand and the differences of this paper from the previous studies are noted. In this chapter the previous studies regarding demand for life, non-life and corporate insurance are reviewed and their results discussed.

In chapter 3 a time series analysis of insurance demand in Iran is performed. The analysis is made for life insurance and property insurance separately. This study indicates the relation between the Iranian insurance industry and Iran's economic environment. Then a time series analysis of insurance demand in Iran has been performed to find variables that lead to a variation in the demand for insurance by using the stepwise backward elimination method. The stepwise backward elimination technique starts by calculating statistics for a model, including all of the potential independent variables. Then one variable showing the smallest contribution to the model is deleted at each step until all of the remaining variables become significant. The method is convenient as we are able to determine a finalized model in a systematic

manner. The empirical analyses for life insurance and property insurance demand in Iran have been done independently to obtain models for an explanation of effective factors in insurance demand in Iran. Several variables are considered in the model (based on previous research) such as illiteracy, population, income, loss probability, price of insurance and expected inflation. The analysis for life insurance points out that illiteracy has a significant effect on the demand. By decreasing illiteracy, insurance demand enhances for the reason that education leads people to a higher degree of risk aversion. Also population is a significant variable that depresses the demand. It is interpreted as altruistic behavior in the people that support each other financially in the problems. The variable of insurance price is significantly and negatively related to the insurance demand as expected. Dependency ratio has a significant role in insurance demand; the number of dependents has a positive effect on the amount of life insurance purchased. As dependents grow in number the loss due to premature death of the householder has a greater effect and justification for the insurance becomes stronger. Inflation is a significant factor that reduces the demand. Social security is a significant factor that increases the demand. Our analysis for property insurance indicates that illiteracy is again a significant factor. By reducing illiteracy, property insurance demand increases because education guides people to more awareness of the beneficial role of insurance. Population is also a significant factor that has a demand reducing effect. Iranians help each other in the case of loss because of their culture and Islamic beliefs. Our research proves that income has a significant and positive effect on the demand and property insurance is a normal good. As income, increases the property insurance becomes more affordable. As expected the variable of insurance price has a significant and negative effect on the insurance purchasing. Private capital is positively associated with the demand because property insurance is predominantly for the protection of tangible wealth. Comparing the results of life and property insurance demand, we see that property insurance is responsive to income but life insurance is not. Life insurance is more responsive to illiteracy, population and price than property insurance. Life insurance is sensitive to inflation but property insurance is not sensitive to inflation. In both cases the social variables play a more significant role than economic variables.

In chapter 4 property-liability insurance demand amongst corporations is studied by using cross-sectional data from Iranian companies to analyze the variables that give an incentive to the companies to buy insurance. There are several factors (based on previous studies) such as, the debt of the company, bankruptcy probability, size of the company, profit, cumulative depreciation, type of industry and tax, which are selected for the model. Our analysis of corporate demand of insurance shows that the variables of cumulative depreciation to total assets, debt to total assets and tax to total assets have a positive and significant role in demand that are consistent with the hypotheses. The variable of working capital to total assets (indicating solvency probability) has a negative and significant role in insurance demand as expected. Actually a company that has more depreciated assets will benefit more in the case of indemnification. As purchasing insurance is necessary for borrowing a loan from the banks in Iran leverage has a positive effect in demand. In Iran insurance premiums are deductible business expenses (and reduces the tax payment) that motivate insurance demand. As increasing solvency probability reduces the bankruptcy probability it has a negative effect in the amount of insurance the firm purchases.

In chapter 5 the overall results are summarized and concluding remarks including policy implications are made. Based on the findings of this research, the implications for policy makers are as follows:

1. As illiteracy negatively affects the insurance demand (for both life and property insurance), more attention by the government to extending education in the country and reducing the illiteracy rate will have a positive influence on the demand. As mentioned, education furthers the understanding of risk and the significant role of insurance to lessen the risk.

2. The price of an insurance policy affects the insurance demand (for both life and property insurance), therefore insurers shall reduce the premium for the insurance policies to attract more customers. This needs strategic planning for lowering the cost in the insurance companies. In this sense recent privatization of insurance companies, is started by the Iranian government, causes for competition between insurance companies that might activate the insurance market and the insurance price may fall.

3. Another point is that regarding the negative effect of inflation on life insurance demand, the governmental economic policies that decrease the inflation and stabilize the prices, enhance the life insurance demand.

4. Debt has a positive effect on insurance demand, if the government lend more loans to companies by increasing the limitation on loans as a financial support, this increases the production of companies (and probably increases in the exports of the country) and also it motivates for buying more insurance.

論文審査の結果の要旨

保険は個人や企業が直面するリスクを軽減することによって、それぞれの主体の厚生を増加すると共に社会の安定化にも寄与する。したがって、保険サービス市場の整備は社会経済的に重要な課題である。本論文は、イランにおける保険市場整備の適切な諸政策を導くことを目的として、同国における保険需要行動を実証的に分析したものである。論文は全編5章から成る。

第1章では、研究の背景、目的及び意義が述べられている。

第2章では、保険需要に関する文献レビューがなされ、代表的保険需要行動仮説が説明されている。

第3章では、集計されたタイムシリーズ データに基づくイランにおける生命保険と物損保険それぞれの需要行動が分析されている。回帰分析の手法として段階的変数選択法が用いられている。生命保険需要と物損保険需要双方で重要な変数は文盲率で需要に負の影響を及ぼす。またイスラム社会における相互扶助精神を反映して、人口増加は一人当たり需要を減少させることが確認されている。そしていずれの変数に関する弾力性も生命保険需要において、物損保険需要の3倍程大きい。保険サービス価格は双方の需要に負の影響を及ぼしている一方、所得水準は生命保険需要では非有意であるが物損保険需要では有意に正の効果を与えている。社会保障充実の効果は正・負いずれも考えられるが、イランでは生命保険需要に正の効果を及ぼし、保険との補完関係が確認された。これらは全て重要な知見である。

第4章では、1998年の企業別クロスセクション データによって企業の保険需要行動が分析されている。全産業を対象としたケースでは、税支払額、累積減価償却額が期待通り有意に正の効果を及ぼしている。経常利益の効果は有意に負であるが、これは利潤増加が保険プレミアム支払能力を向上させる以上に、損失に対する支払能力あるいは損失確率低下能力を向上させることを意味し、有用な知見である。次に、化学産業の企業のみを対象にしたモデルでは、企業規模と「1 マイナス運転資本比率」によって代理される破産確率が保険需要に有意な影響を及ぼす結果が得られている。企業規模効果を除去したモデルでは、全産業の場合、負債比率が有意に正の影響を保険需要に及ぼすことが検証されている。これはイランにおける金融システムが保険産業に及ぼす影響を評価するための重要な示唆を与えている。

第5章では、結論と本論文の分析に基づいた政策的含意が述べられている。特に重要な示唆は文盲率の低下政策と規制緩和を含む保険市場の競争促進政策である。

以上要するに、本論文はイランのミクロデータとマクロデータを利用して保険需要行動を実証的に分析したもので、情報科学の発展に寄与するところが少なくない。よって本論文は博士（情報科学）の学位論文として合格と認める。